

REMARKS

Claims 1-9 were pending in the application. Claim 6 is canceled. Claims 1 and 2 are amended to specify that the engine is a direct injection engine and that an injection of fuel into a cylinder is varied such that fuel injection does not occur until, on starting, the cylinder entering a compression phase or an intake phase has passed its top dead center. Support for this amendment may be found, for example, on page 3, lines 20-26 and page 13, lines 14-18 of the specification. Claims 3-5, and 7-9 are amended to remove the recitation of a method. New claims 10-15 depend from claim 2 and recite method claim that mirror claims 3-5 and 7-9. No new matter has been added.

Objections to the Claims

Claim 2 is objected to for reciting a method without reciting method steps. In response to this objection, the language of claim 2 is amended to recite method steps.

Claims 3-9 are objected to for reciting a method in claims that depend from a claim reciting a device. In response to the objection, claims 3-5 and 7-9 are amended to remove the recitation of a method.

Objections to the Specification

The specification is objected to over legal language in the abstract. The abstract is amended to remove objectionable language. No new matter has been added.

Claims Rejections 35 U.S.C. 102

Claims 1-4 and 6-9 are rejected by the Examiner under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US 6,340,016). The Examiner's rejection has been carefully considered.

Claims 1 and 2 are amended to recite that an injection of fuel into a cylinder is varied such that, on starting, fuel injection does not occur until the cylinder entering a compression phase or an intake phase has passed its top dead center. This method has the particular advantage that self-ignition of the fuel as a result of the high compression temperatures is prevented, since only fresh air, rather than a fuel-air mixture, is compressed.

Ueda et al. do not disclose an apparatus or method that prevents self-ignition at engine start by varying the injection of fuel into a cylinder such that fuel injection does not occur until the cylinder entering a compression phase or an intake phase has passed its top dead center. To the contrary, 12-15 indicate injection of fuel before the cylinder reaches top dead center (as indicated by the letter "A"). Regarding column 16, lines 1-25 in Ueda, the reference patent does not disclose a delay of fuel injection until after the cylinder has passed top dead center. Rather, the patent discloses that, as a condition relating to the injection timing, it is necessary for the injection timing to be kept to a later angle than the timing at which the intake valve is closed, as shown in FIG. 12. FIG. 12 indicated an injection occurring before the cylinder reaches top dead center.

In view of amendment to claims 1 and 2 and the foregoing arguments, Applicant respectfully requests that the rejection of claims 1-4 and 6-9 under 35 U.S.C. 102(b) be withdrawn.

Claims Rejections 35 U.S.C. 103

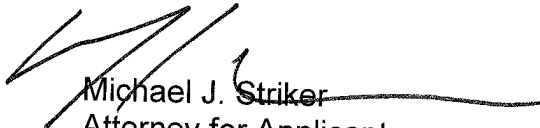
Claim 5 is rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (US 6,340,016) in view of Akimoto (US 5,676,108). The Examiner's rejection has been carefully considered.

Ueda et al. does not teach or suggest an apparatus or method as recited in claims 1 and 2, as amended, for reasons described in the rejection under 35 U.S.C. 102(b). Similarly, Akimoto does not teach or suggest an apparatus or method that prevents self-ignition at engine start by varying the injection of fuel into a cylinder such that fuel injection does not occur until the cylinder entering a compression phase or an intake phase has passed its top dead center. Applicant respectfully requests that the rejection of claim 5 under 35 U.S.C. 103(a) be withdrawn.

Conclusion

The application in its amended state is believed to be in condition for allowance. Action to this end is courteously solicited. Should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate claim language that will place the application into condition for allowance.

Respectfully submitted,


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